THE ANNALS *of* MATHEMATICAL STATISTICS

FOUNDED AND EDITED BY H. C. CARVER, 1930-1938
EDITED BY S. S. WILKS, 1938-1949

THE OFFICIAL JOURNAL OF THE INSTITUTE OF MATHEMATICAL STATISTICS

VOLUME 38

1967

CONTENTS OF VOLUME 38

ARTICLES AND NOTES

ABRAHAMSON, INNIS G. Exact Bahadur efficiencies for the Kolmogorov-Smirnov and Kuiper one- and two-sample statistics.... 1475–1490

ABRAMSON, MORTON AND MOSER, W. O. J. Permutations without rising or falling w-sequences..... 1245–1255

ADICHIE, J. N. Estimates of regression parameters based on rank tests..... 894–904

ADICHIE, J. N. Asymptotic efficiency of a class of nonparametric tests for regression parameters..... 884–893

ALLEN, J. L. AND BEEKMAN, J. A. Distributions of a M. Kac statistic..... 1919–1923

ANDĚL, JIŘÍ. Local asymptotic power and efficiency of tests of Kolmogorov-Smirnov type..... 1705–1725

ARBIB, MICHAEL. Realization of stochastic systems..... 927–933

AUSTIN, D. G. A note on the Birkhoff ergodic theorem..... 922–923

BAHADUR, R. R. Rates of convergence of estimates and test statistics..... 303–325

BALDESSARI, BRUNO. The distribution of a quadratic form of normal random variables..... 1700–1704

BANERJEE, SAIBAL. Confidence interval of preassigned length for the Behrens-Fisher problem..... 1175–1279

BARTOO, JAMES B. AND PURI, PREM S. On optimal asymptotic tests of composite statistical hypotheses..... 1845–1852

BASU, A. P. AND WOODWORTH, GEORGE. A note on nonparametric tests for scale..... 274–277

BASU, A. P. On the large sample properties of a generalized Wilcoxon-Mann-Whitney statistic..... 905–915

BASU, A. P. On two K-sample rank tests for censored data..... 1520–1535

BATHER, J. A On a quickest detection problem..... 711–724

BEEKMAN, J. A. AND ALLEN, J. L. Distributions of a M. Kac statistic..... 1919–1923

BELL, C. B. AND DOKSUM, K. A. Distribution-free tests of independence..... 429–447

BERK, ROBERT H. A special structure and equivariant estimation.. 1436–1445

BERMAN, SIMEON M. An occupation time theorem for the angular component of plane Brownian motion..... 25–31

BHATTACHARYA, P. K. Efficient estimation of a shift parameter from grouped data..... 1770–1787

BHATTACHARYYA, G. K. Asymptotic efficiency of multivariate normal score test..... 1753–1758

BICKEL, P. J. AND HODGES, J. L. JR. The asymptotic theory of Galton's test and a related simple estimate of location..... 73–89

BICKEL, PETER J. AND BLACKWELL, DAVID. A note on Bayes estimates 1907–1911
BLACKWELL, DAVID AND BICKEL, PETER J. A note on Bayes estimates 1907–1911
BLOCH, DANIEL A. AND WATSON, GEOFFREY S. A Bayesian study of the multinomial distribution 1423–1435
BLUM, J. R. AND ROSENBLATT, JUDAH. On partial a priori information in statistical inference 1671–1678
BLUMENTHAL, SAUL. Limit theorems for functions of shortest two-sample spacings and a related test 108–116
BOAS, R. P. Lipschitz behavior and integrability of characteristic functions 32–36
BORGMAN, LEON E. Random hydrodynamic forces on objects 37–51
BOYD, D. W., KOTZ, S. AND JOHNSON, N. L. Series representations of distributions of quadratic forms in normal variables I. Central case 823–837
BOYD, D. W., KOTZ, S. AND JOHNSON, N. L. Series representations of distributions of quadratic forms in normal variables II. Non-central case 838–848
BROWN, L. The conditional level of Student's t test 1068–1071
BUEHLER, R. J. AND HORA, R. B. Fiducial theory and invariant prediction 795–801
BÜHLER, WOLFGANG J. The treatment of ties in the Wilcoxon test .. 519–523
BÜHLER, WOLFGANG J. Slowly branching processes 919–921
CACOULLOS, THEOPHILOS. Characterizations of normality by constant regression of linear statistics on another linear statistic .. 1894–1898
CARLYLE, J. W. Identification of state-calculable functions of finite Markov chains 201–205
CHAN, L. K. Remark on the linearized maximum likelihood estimate 1876–1881
CHERNOFF, H. A note on risk and maximal regular generalized submartingales in stopping problems 606–608
CHERNOFF, HERMAN, GASTWIRTH, JOSEPH L. AND JOHNS, M. V. Asymptotic distribution of linear combinations of functions of order statistics with applications to estimation 52–72
CHEW, MILTON C., JR. A sequential search procedure 494–530
CHOW, Y. S. On the expected value of a stopped submartingale 608–610
CHOW, Y. S. On a strong law of large numbers for martingales 610–611
COGBURN, ROBERT. Stringent solutions to statistical decision problems 447–464
CONOVER, W. J. The distribution functions of Tsao's truncated Smirnov statistics 1208–1215
CONOVER, W. J. A k-sample extension of the one-sided two-sample Smirnov test statistic 1726–1730

CONSUL, P. C. On the exact distributions of likelihood ratio criteria for testing independence of sets of variates under the null hypothesis 1160–1169
CONSUL, P. C. On the exact distributions of the criterion W for testing sphericity in a p-variate normal distribution 1170–1174
COVER, THOMAS M. AND EFRON, BRADLEY. Geometrical probability and random points on a hypersphere 213–220
DAVID, H. T. AND THOMAS, DAVID R. Game value distributions I .. 242–250
DARLING, D. A. AND ROBBINS, HERBERT. Finding the size of a finite population 1392–1398
DARST, R. B. AND ZINK, R. E. A perfect measurable space that is not a Lusin space 1918
DAVIS, A. W. A counter-example relating to certain multivariate generalizations of t and F 613–616
DEMPSTER, A. P. Upper and lower probabilities induced by a multivalued mapping 325–340
DERMAN, CYRUS AND VEINOTT, ARTHUR F., JR. A solution to a countable system of equalities arising in Markovian decision processes 582–585
DICKEY, JAMES M. Expansions of t densities and related complete integrals 503–511
DICKEY, JAMES M. Matricvariate generalizations of the multivariate t distributions and the inverted multivariate t distribution 511–519
DOKSUM, K. A. AND BELL, C. B. Distribution-free tests of independence 429–447
DOKSUM, KJELL. Robust procedures for some linear models with one observation per cell 878–883
DOKSUM, KJELL. Asymptotically optimal statistics in some models with increasing failure rate averages 1731–1739
DRAPER, NORMAN R. AND MITCHELL, TOBY J. The construction of saturated 2_R^{k-q} designs 1110–1126
DUBINS, LESTER E. AND TEICHER, HENRY. Optimal stopping when the future is discounted 601–606
DWASS, MEYER. Simple random walk and rank order statistics 1042–1053
EATON, MORRIS L. Some optimum properties of ranking procedures 124–137
EATON, MORRIS L. The generalized variance: testing and ranking problem 941–943
EAVES, D. M. Sample functions of Gaussian random homogeneous fields are either continuous or very irregular 1579–1582
EFRON, BRADLEY. The power of the likelihood ratio test 802–806
EFRON, BRADLEY AND COVER, THOMAS M. Geometrical probability and random points on a hypersphere 213–220

EHRENFELD, S. AND ZACKS, S. Testing hypotheses in randomized factorial experiments 1494–1507
ESARY, J. D., PROSCHAN, F. AND WALKUP, D. W. Association random variables with applications 1466–1474
FABIAN, VÁCLAV. Stochastic approximation of minima with improved asymptotic speed 191–200
FARRELL, R. H. On the lack of a uniformly consistent sequence of estimators of a density function in certain cases 471–475
FISHBURN, PETER C. Bounded expected utility 1054–1060
FISHBURN, PETER C. Preference-based definitions of subjective probability 1605–1617
FRASER, D. A. S. Statistical models and invariance 1061–1067
FRASER, D. A. S. Data transformations and the linear model 1456–1465
FREEDMAN, DAVID A. Some invariance principles for functionals of a Markov chain 1–7
FREEDMAN, DAVID A. A remark on the law of the iterated logarithm 599–601
FREEDMAN, DAVID A. On oscillating semigroup 924–926
FREEDMAN, DAVID. Timid play is optimal 1281–1283
FREEDMAN, DAVID AND PURVES, ROGER. Timid play is optimal, II 1284–1286
FREEDMAN, DAVID A. A theorem of Lévy and a peculiar semigroup 1552–1557
FREEDMAN, DAVID A. A remark on sequential discrimination 1666–1676
GASTWIRSTH, JOSEPH L., JOHNS, M. V. AND CHERNOFF, HERMAN. Asymptotic distribution of linear combinations of functions of order statistics with applications to estimation 52–72
GEISSER, SEYMOUR. Estimation associated with linear discriminants 807–817
GETOOR, R. K. Some remarks on continuous additive functionals 1655–1660
GOLDMAN, JAY R. Stochastic point processes: limit theorems 771–779
GUMBEL, E. J. AND PICKANDS, JAMES III. Probability tables for the extremal quotient 1541–1551
GUNDY, RICHARD F. The martingale version of a theorem of Marchinkiewicz and Zygumd 725–734
GUNDY, RICHARD AND SIEGMUND, DAVID. On a stopping rule and the central limit theorem 1915–1917
GUPTA, M. K. Asymptotically nonparametric test of symmetry 849–866
HAGGSTROM, GUS W. Optimal sequential procedures when more than one stop is required 1618–1626
HANSON, D. L. Some results relating moment generating functions and convergence rates in the law of large numbers 742–750
HARPER, L. H. Stirling behavior is asymptotically normal 410–415
HARTER, H. LEON AND MOORE, ALBERT H. Asymptotic variances and covariances of maximum-likelihood estimators, from censored samples, of the parameters of Weibull and gamma populations 557–571

HARVILLE, DAVID A. Estimability of variance components for the two-way classification with interaction 1508–1519
HERR, DAVID G. Asymptotically optimal tests for multivariate normal distributions 1829–1844
HERZBERG, AGNES M. Cylindrically rotatable designs of types 1, 2, and 3 167–176
HERZBERG, AGNES M. A method for the construction of second order rotatable designs in k dimensions 177–180
HEYDE, C. C. On large deviation problems for sums of random variables which are not attracted to the normal law 1575–1578
HOADLEY, A. BRUCE. On the probability of large deviations of functions of several empirical cdf's 360–382
HODGES, J. L., JR. AND BICKEL, P. J. The asymptotic theory of Galton's test and a related simple estimate of location 73–89
HOLLANDER, MYLES. Rank tests for randomized blocks when the alternatives have an *a priori* ordering 867–877
HORA, R. B. AND BUEHLER, R. J. Fiducial theory and invariant prediction 795–801
ISAAC, RICHARD. On stationary Markov processes 588–593
JOFFE, A. On the Galton-Watson branching process with mean less than one 264–266
JOFFE, A. D. Minimum chi-squared estimation using independent statistics 267–270
JOGDEO, KUMAR. Monotone convergence of binomial probabilities with an application to maximum likelihood estimation 1583–1586
JOHN, J. A. Reduced group divisible paired comparison designs 1887–1893
JOHN, PETER W. M. On obtaining balanced incomplete block designs from partially balanced association schemes 618–620
JOHNS, M. V., CHERNOFF, HERMAN AND GASTWIRTH, JOSEPH L. Asymptotic distribution of linear combinations of functions of order statistics with applications to estimation 52–72
JOHNSON, N. L., BOYD, D. W. AND KOTZ, S. Series of representations of distributions of quadratic forms in normal variables I. Central case 823–837
JOHNSON, N. L., BOYD, D. W. AND KOTZ, S. Series representations of distributions of quadratic forms in normal variables II. Noncentral case 838–848
JOHNSON, RICHARD A. Asymptotic expansions associated with the nth power of a density 1266–1272
JOHNSON, R. A. An asymptotic expansion for posterior distributions 1899–1906
JOSHI, V. M. Confidence intervals for the mean of a finite population 1280–1307
JOSHI, V. M. Inadmissibility of the usual confidence sets for the mean of a multivariate normal population 1868–1876

KAILATH, THOMAS. On measures equivalent to Wiener measure.. 261–263
KARLIN, SAMUEL AND MCGREGOR, JAMES. Properties of the stationary measure of the critical case simple branching process..... 977–991
KATTI, S. K. Infinite divisibility of integer-valued random variables..... 1306–1308
KHATRI, C. G. Some distribution problems connected with the characteristic roots of $S_1S_2^{-1}$..... 944–948
KHATRI, C. G. On certain inequalities for normal distributions and their applications to simultaneous confidence bounds..... 1853–1867
KIEFER, J. On Bahadur's representation of sample quantiles..... 1323–1342
KLIMKO, EUGENE M. On the Glivenko-Cantelli theorem for infinite invariant measures..... 1273–1277
KNOTT, MARTIN. Models for cataloguing problems..... 1255–1260
KOOP, J. C. Replicated (or interpenetrating) samples of unequal sizes..... 1142–1147
KOTZ, SAMUEL, JOHNSON, N. L. AND BOYD, D. W. Series representations of distributions of quadratic forms in normal variables I. Central case..... 823–837
KOTZ, SAMUEL, JOHNSON, N. L. AND BOYD, D. W. Series representations of distributions of quadratic forms in normal variables II. Non-central case..... 838–848
KRISHNAIAH, P. R. AND PATHAK, P. K. Tests for the equality of covariance matrices under the intraclass correlation model..... 1286–1288
KUNITA, HIROSHI. Note on Dynkin's (α, ξ)-subprocess of standard Markov process..... 1647–1655
LEYSIEFFER, FREDERICK W. Functions of finite Markov chains.... 206–212
LORDEN, GARY. Integrated risk of asymptotically Bayes sequential tests..... 1399–1422
LUCE, R. DUNCAN. Sufficient conditions for the existence of a finitely additive probability measure..... 780–786
MCGREGOR, JAMES AND KARLIN, SAMUEL. Properties of the stationary measure of the critical case simple branching process..... 977–991
MACQUEEN, J. An intrinsically determined Markov chain..... 934–936
MAHAMUNULU, D. M. Some fixed-sample ranking and selection problems..... 1079–1091
MATTHES, T. K. AND TRUAX, D. R. Tests of composite hypotheses for the multivariate exponential family..... 681–697
MAZUMDAR, SATI. On the construction of cyclic collineations for obtaining a balance set of L-restrictional prime-powered lattice designs..... 1293–1295
MEHRA, K. L. AND SARANGI, J. Asymptotic efficiency of certain rank tests for comparative experiments..... 90–107
MEHRA, K. L. AND PURI, M. L. Multi-sample analogues of some one-sample tests..... 523–550

MESNER, DALE M. A new family of partially balanced incomplete block designs with some latin square design properties..... 571–582
MILLER, H. D. A note on sums of independent random variables with infinite first moment..... 751–758
MILTON, ROY C. On exact probabilities of rank orders for two widely separated normal distributions..... 1491–1493
MITCHELL, TOBY J. AND DRAPER, NORMAN R. The construction of saturated 2_R^{k-p} designs..... 1110–1126
MOLENAAR, W. AND VAN DER VELDE, E. A. How to survive a fixed number of fair bets..... 1278–1280
MOORE, ALBERT H. AND HARTER, H. LEON. Asymptotic variances and covariances of maximum-likelihood estimators, from censored samples, of the parameters of Weibull and gamma populations..... 557–571
MOSER, W. O. J. AND ABRAMSON, MORTON. Permutations without rising or falling w-sequences..... 1245–1255
MOY, SHU-TEH C. Extensions of a limit theorem of Everett, Ulam and Harris on multitype branching process with countably many types..... 992–999
MUDHOLKAR, GOVIND S. AND RAO, PODURI S. R. S. Some sharp multivariate Tchebycheff inequalities..... 393–401
MUSTAFI, CHANDAN K. The inverse of a certain matrix, with application..... 1289–1292
NA, HWA SUNG AND RAPOPORT, ANATOL. A formula for the probability of obtaining a tree from a graph constructed randomly except for "Exogamous bias"..... 226–241
NEUTS, MARCEL F. A general class of bulk queues with Poisson input 759–770
NOE, MARC AND VANDEWIELE, GEORGES. An inequality concerning tests of fit of the Kolmogorov-Smirnov type..... 1240–1244
NORVIG, TORSTEN. Concensus of subjective probabilities: a convergence theorem..... 221–225
OLSHEN, RICHARD A. Sign and Wilcoxon tests for linearity..... 1759–1769
OLSON, MILTON PHILIP. The theory of experiment: operational definition of the probability space..... 401–410
OOSTERHOFF, J. AND VAN ZWET, W. R. On the combination of independent test statistics..... 659–680
PANZONE, RAFAEL. Alternative proofs for certain upcrossing inequalities..... 735–741
PATHAK, P. K. AND KRISHNAIAH, P. R. Tests for the equality of covariance matrices under the intraclass correlation model..... 1286–1288
PAULSON, EDWARD. Sequential procedures for selecting the best one of several binomial population..... 117–123
PFANZAGL, J. A technical lemma for monotone likelihood ratio families..... 611–613

PFANZAGL, J. Characterizations of conditional expectations 415–422
PICKANDS, JAMES III AND GUMBEL, E. J. Probability tables for the extremal quotient 1541–1551
PICKANDS, JAMES III. Sample sequences of maxima 1570–1574
PILLAI, K. C. SREEDHARAN. On the distribution of the largest root of a matrix in multivariate analysis 616–618
PITMAN, E. J. G. AND WILLIAMS, E. J. Cauchy-distributed functions of Cauchy variates 916–918
PORT, SIDNEY C. On hitting for stable processes 1021–1026
PORT, SIDNEY C. AND STONE, CHARLES J. A large sample test for the independence of two renewal processes 1037–1041
POSNER, EDWARD C., RODEMICH, EUGENE R. AND RUMSEY, HOWARD J. JR. Epsilon entropy of stochastic processes 1000–1020
PRABHU AJGAONKAR, S. G. On Horvitz and Thompson's T_1 class of linear estimators 1882–1886
PRINGLE, R. M. AND RAYNER, A. A. A note on generalized inverses in the linear hypothesis not of full rank 271–273
PROSCHAN, F., WALKUP, F. AND ESARY, J. D. Association random variables, with applications 1466–1474
PURI, M. L. AND MEHRA, K. L. Multi-sample analogues of some one-sample tests 523–550
PURI, MADAN LAL AND SEN, PRANAB KUMAR. On the theory of rank order tests for location in the multivariate one sample problem 1216–1228
PURI, MADAN LAL AND SEN, PRANAB KUMAR. On robust estimation in incomplete block designs 1587–1591
PURI, PREM S. AND BARTOO, JAMES B. On optimal asymptotic tests of composite statistical hypotheses 1845–1852
PURVES, ROGER AND FREEDMAN, DAVID. Timid play is optimal, II .. 1284–1286
RAKTOE, B. L. Application of cyclic collineations to the construction of balanced L-restrictional prime powered lattice designs 1127–1141
RAO, PODURI S. R. S. AND MUDHOLKAR, GOVIND S. Some sharp multivariate Tchebycheff inequalities 393–401
RAO, SUBBA T. On the cross periodogram of a stationary Gaussian vector process 593–599
RAPOPORT, ANATOL AND NA, HWA SUNG. A formula for the probability of obtaining a tree from a graph constructed randomly except for "Exogamous bias" 226–241
RAYNER, A. A. AND PRINGLE, R. M. A note on generalized inverses in the linear hypothesis not of full rank 271–273
RIZVI, M. HASSEB AND SOBEL, MILTON. Nonparametric procedures for selecting a subset containing the population with the largest α-quantile 1788–1803

ROBBINS, H., SIMONS, G. AND STARR, N. A sequential analogue of the Behrens-Fisher problem 1384–1391
ROBBINS, HERBERT AND DARLING, D. A. Finding the size of a finite population 1392–1398
ROBERTSON, TIM. On estimating a density which is measurable with respect to a σ-lattice 482–494
RODEMICH, EUGENE R., RUMSEY, HOWARD J. JR. AND POSNER, EDWARD C. Epsilon entropy of stochastic processes 1000–1020
ROSÉN, BENGT. On an inequality of Hoeffding 382–393
ROSENBLATT, JUDAH AND BLUM, J. R. On partial a priori information in statistical inference 1671–1678
RUMSEY, HOWARD J. JR., POSNER, EDWARD C. AND RODEMCH, EUGENE R. Epsilon entropy of stochastic processes 1000–1020
SACKSTEDER, RICHARD. A note on statistical equivalence 787–794
SARANGI, J. AND MEHRA, K. L. Asymptotic efficiency of certain rank tests for comparative experiments 90–107
SAXENA, ASHOK K. A note on classification 1592–1593
SCHAUFELE, RONALD A. A potential theoretic proof of a theorem of Derman and Veinott 585–588
SCHÜLER, W. Multistage sampling procedures based on prior distributions and costs 464–471
SCHWARTZ, RICHARD E. Locally minimax tests 340–360
SCHWARTZ, RICHARD. Admissible tests in multivariate analysis of variance 698–710
SCHWARTZ, STUART C. Estimation of probability density by an orthogonal series 1261–1265
SCOTT, ALASTAIR. A note on conservative confidence regions for the mean of a multivariate normal 278–280
SEN, PRANAB KUMAR AND PURI, MADAN LAL. On the theory of rank order tests for location in the multivariate one sample problem 1216–1228
SEN, PRANAB KUMAR. Asymptotically most powerful rank order tests for grouped data 1229–1239
SEN, PRANAB KUMAR AND PURI, MADAN LAL. On robust estimation in incomplete block designs 1587–1591
SHEPP, L. A. A first passage problem for the Wiener process 1912–1914
SHORACK, GALEN R. Testing against ordered alternatives in model I analysis of variance; normal theory and nonparametric 1740–1752
SIDDIQUI, M. M. A bivariate t distribution 162–166
SIEGUMUND, DAVID OLIVER. Some problems in the theory of optimal stopping rules 1627–1640
SIEGMUND, DAVID O. Some one-sided stopping rules 1641–1646
SIEGMUND, DAVID AND GUNDY, RICHARD F. On a stopping rule and the central limit theorem 1915–1917

SIMONS, GORDON. Lower bounds for average sample number of sequential multihypothesis tests 1343–1365
SIMONS, GORDON. A sequential three hypothesis test for determining the mean of a normal population with known variance 1365–1376
SIMONS, GORDON. A class of sequential procedures for choosing one of K hypotheses concerning the unknown drift parameter of the Wiener process 1376–1383
SIMONS, G., STARR, NORMAN AND ROBBINS, HERBERT. A sequential analogue of the Behrens-Fisher problem 1384–1391
SINGH, M. P. The relative efficiency of some two-phase sampling schemes 937–940
SKIBINSKY, MORRIS. Adequate subfields and sufficiency 155–161
SPJØTVOLL, EMIL. Optimum invariant tests in unbalanced variance components models 422–429
SOBEL, MILTON. Nonparametric procedures for selecting a subset containing the population with the largest α-quantile 1804–1816
SOBEL, MILTON AND RIZVI, M. HASEEB. Nonparametric procedures for selecting the t populations with the largest α-quantile 1788–1803
SRIVASTAVA, M. S. Comparing distances between multivariate populations—the problem of minimum distances 550–557
STARR, N., ROBBINS, H. AND SIMONS, G. A sequential analogue of the Behrens-Fisher problem 1384–1391
STEUTEL, F. W. Note on the infinite divisibility of exponential mixtures 1303–1306
STONE, CHARLES J. AND PORT, SIDNEY C. A large sample test for the independence of two renewal processes 1037–1041
STONE, M. Generalized Bayes decision functions, admissibility and the exponential family 818–822
STUDDEN, W. J. On selecting a subset of k populations containing the best 1072–1078
SUGIYAMA, T. On the distribution of the largest latent root of the covariance matrix 1148–1151
SUGIYAMA, T. Distribution of the largest latent root and the smallest latent root of the generalized B statistic and F statistics and in multivariate analysis 1152–1159
SUN, TZE-CHIEN. A note on the unimodality of distribution functions of class L 1296–1299
SWITZER, PAUL. Reconstructing patterns from sample data 138–154
TAMHANKAR, M. V. A characterization of normality 1924–1927
TEICHER, HENRY AND DUBINS, LESTER E. Optimal stopping when the future is discounted 601–606
TEICHER, HENRY. Identifiability of mixtures of product measures .. 1300–1302
THOMAS, DAVID R. AND DAVID, H. T. Game value distributions I .. 242–250
THOMAS, DAVID R. Game value distributions II 251–260

TOPSOE, FLEMMING. Preservation of weak convergence under mappings 1661–1665
TRUAX, D. R. AND MATTHES, T. K. Tests of composite hypotheses for the multivariate exponential family 681–697
TSUTAKAWA, R. K. Asymptotic properties of the block up-and-down method in bio-assay 1822–1828
TWEEDIE, M. C. K. A mean-square-error characterization of binomial-type distributions 620–624
VAN DER VELDE, E. A. AND MOLENAAR, W. How to survive a fixed number of fair bets 1278–1280
VANDEWIELE, GEORGES AND NOE, MARC. An inequality concerning tests of fit of the Kolmogorov-Smirnov type 1240–1244
VAN NESS, JOHN W. AND WOODROOFE, MICHAEL B. The maximum deviation of sample spectral densities 1558–1569
VAN ZWET, W. R. AND OOSTERHOFF, J. On the combination of independent tests statistics 659–680
VAN ZWET, W. R. An inequality for expected values of sample quantiles 1817–1821
VARBERG, DALE E. Equivalent Gaussian measures with a particularly simple Radon-Nikodym derivative 1027–1030
VEINOTT, ARTHUR F., JR. AND DERMAN, CYRUS. A solution to a countable system of equalities arising in Markovian decision processes 582–585
VENTER, J. H. An extension of the Robbins-Monro procedure 181–190
VENTER, J. H. On covergence of the Kiefer-Wolfowitz approximation procedure 1031–1036
VENTER, J. H. On estimation of the mode 1446–1456
WALKUP, D. W., ESARY, J. D. AND PROSCHAN, F. Association of random variables, with applications 1466–1474
WATSON, GEOFFREY S. AND BLOCH, DANIEL A. A Bayesian study of the multinomial distribution 1423–1435
WATSON, GEOFFREY S. Linear least squares regression 1679–1699
WILLIAMS, E. J. AND PITMAN, E. J. G. Cauchy-distributed functions of Cauchy variates 916–918
WILSON, A. L. An approach to simultaneous tolerance intervals in regression 1536–1540
WISJMAN, R. A. General proof of termination with probability one of invariant sequential probability ratio tests based on multivariate normal observations 8–24
WOODROOFE, MICHAEL. On the maximum deviation of the sample density 475–482
WOODROOFE, MICHAEL B. AND VAN NESS, JOHN W. The maximum deviation of sample spectral densities 1558–1569

WOODWORTH, GEORGE AND BASU, A. P. A note on nonparametric tests for scale 274–277
ZACKS, S. An the non-existence of a fixed sample estimator of the mean of a log-normal distribution having a prescribed proportional closeness 949
ZACKS, S. AND EHRENFELD, S. Testing hypotheses in randomized factorial experiments 1494–1507
ZINK, R. E. AND DARST, R. B. A perfect measurable space that is not a Lusin space 1918
ZYSKIND, GEORGE. On canonical forms, non-negative covariance matrices and best and simple least squares linear estimator in linear models 1092–1109

BOOK REVIEWS

BLUMENTHAL, R. M. Review of "Mathematical Foundations of the Calculus of Probability" by J. Neveu 626–625
DWASS, MEYER. Review of "Stochastic Processes" by N. U. Prabhu 626
GETOOR, R. K. Review of "Studies in the Theory of Random Processes" by A. V. Skorokhod 287
GNANIDESIKAN, R. Review of "Percentage Points of the Sum $V_1^{(s)}$ of Roots ($s = 1 - 50$) A Unified Table for Tests of Significance in Various Univariate and Multivariate Hypotheses" by Tito A. Mijares 628–631
GRAYBILL, FRANKLIN. Review of "Linear Statistical Inference and Its Applications" by C. R. Rao 281–284
HAJIAN, ARSHAG. Review of "Ergodic Theory and Information" by Patrick Billinglsey 285–286
OWEN, D. B. Review of "Tables of the Rayleigh-Rice Distributions" by L. S. Bark, L. N. Bolshev, P. I. Kuzenetsov and A. P. Cherenkov 294–296
OWEN, D. B. Review of "Biometrics for Statisticians" by E. S. Pearson and H. O. Hartley 632–633
SALEHI, H. Review of "Differential Space, Quantum Systems, and Prediction" by N. Wiener, A. Siegel, B. Rankin and W. R. Martin 1929–1931
SPITZER, FRANK. Review of "An Introduction to Probability Theory and Its Applications" by William Feller 951–952
WOLD, H. O. Review of "Spectral Analysis of Economic Time Series" by C. W. J. Granger, in association with M. Hatanaka .. 288–293
WOLFOWITZ, J. Review of "Information Theory" by Robert Ash .. 627

MISCELLANEOUS

Book Reviews....281–296, 624–633, 951–952, 1929–1931
Correction Notes and Acknowledgment of Priority....280, 624, 950, 1309, 1594, 1928
Abstracts of Papers....297–299, 634–643, 953–971, 1310–1316, 1595–1598, 1932–1944
News and Notices....300–301, 644–652, 972–973, 1317–1318, 1599–1602, 1941–1943
Doctoral Dissertations....647–653
Auditor's Report....1944–1947
Report of the Los Angeles Meeting, August 15–17, 1966....653–657
Report of the Columbus Meeting, March 23–25, 1967....973–975
Report of the Atlanta Meeting, April 3–5, 1967....1318–1321
Report of the Missoula Meeting, June 15–17, 1967....1602–1603
Publications Received....301–302, 658, 976, 1322, 1604, 1947

INDEX OF ABSTRACTS FOR 1967

Abrahamson, Innis G., 959
Abt, Klaus, 634
Aitkin, Murray A., Reinfurt, Karen H. and Nelson, W. C., 960
Alam, Khursheed, 634
Anderson, Gerald R. and Kawata, Tatsuo, 960
Bancroft, T. A. and Han, Chien-pai, 1933
Bancroft, T. A. and Tetreault, Florence G., 634
Bartlett, N. S. and Govindarala-julu, Z., 953
Basu, A.P., 635
Bell, C. B. and Geller, H., 953
Bell, C. B. and Haller, Smith H., 953
Bell, C. B. and Mednik, E. F., 953
Bell, C. B. and Smith, P., 954
Beran, R. J. W., 960
Berk, Robert H. and Savage, Richard I., 969
Bhat, U. N., 635
Bhattacharya, P. K., 1311
Bickel, Peter J., 1597, 1938
Birnbaum, Allen and Laska, Eugene M., 1932
Blumenthal, Saul and Cohen, Arthur, 638, 639
Bohrer, Robert, 639
Boruanker, Jay D., 954
Bose, R. C., 1314
Breiter, M. C. and Krishnaiah, P. R., 960
Chanda, K. C., 1932
Chitgopekar, S. S., 970
Chopra, Dharam Vir, 961, 968, 969
Chopra, D. V. and Srivastava, J. N., 1937
Cohen, Arthur and Blumenthal, Saul, 638, 639
Cover, Thomas M., 1932
Das Gupta, S., 1933
David, H. A., and Joshi, P. C., 640
Davidson, Roger R., 1311
Deely, John J., Tierney, Martin S. and Zimmer, William J., 955
Deshpandé, Jayant V., 640
Dharmadhikari, S. W., 1311
Doksum, Kjell, 297, 1938
Dubey, Satya D., 955
Dwass, Meyer, 970
Eaton, Morris L., 970
Efron, Bradley, 298
Efron, Bradley and Truax, Donald, 1595
Ehrenfeld, S. and Zacks, S., 635
Fairweather, William R., 961
Feder, Paul and Simons, Gordon, 1315
Gastwirth, Joseph L. and Gibbons, Jean D., 962
Gebert, James R. and Kale, B. K., 961
Geisser, S. and Mahamunulu, D. M., 1933
Geller, H. and Bell, C. B., 953
Ghosh, Sakti P., 955
Gibbons, Jean D. and Gastwirth, Joseph L., 962
Goldie, Charles, 642
Govindaralajulu, Z. and Bartlett, N. S., 953
Govindarajulu, Zakkula and Makabe, Hajime, 957
Gupta, Milan K., 642
Haller, H. Smith and Bell, C. B., 953
Han, Chien-pan and Bancroft, T. A., 1933
Haq, M. Safiul, 962

Hartley, H. O. and Rao, J. N. K., 969
Harter, H. Leon, 636
Hinich, Melvin, 962
Hollander, Myles, 1933
Hudson, D. J., 1934
Iglewicz, Boris and Meyers, Raymond H., 962
Iglehart, Donald E., 1939
Jogdeo, Kumar and Patil, G. P., 642
Jogdeo, Kumar, 963, 968
John, Peter W. M., 1311
Johnson, N. L. and Kotz, Samuel, 1595
Johnson, R. A., 1934
Joshi, P. C. and David, H. A., 640
Kale, B. K., 1935
Kale, B. K. and Gebert, James R., 961
Kanzawa, M. and Okamoto, M., 1935
Katti, S. K. and Waikar, V. B., 967
Kawata, Tatsuo and Anderson, Gerald R., 960
Kawata, Tatsuo, 963
Kiefer, J., 643
Klimko, L. A. and Sucheston, L., 956
Klimko, Eugene M., 956
Kotz, Samuel and Johnson, N. L., 1595
Krafft, Olaf, 963
Krishnaiah, P. R. and Breiter, M. C., 960
Krishnaiah, P. R., 964
Ku, H. H. and Kullback, S., 297
Kullback, S. and Ku, H. H., 297
Kullback, Solomon, 964
Laska, Eugene M. and Birnbaum, Allen, 1932
Laubscher, Nico F. and Rudolph, G. J., 964
Lawrence, Michael J., 1595
Lund, David R. and Tiao, George C., 967, 1314
Mahamunulu, Desu M., 956
Mahamunulu, D. M. and Geisser, S., 1933
Makabe, Hajime and Govindarajulu, Zakkala, 957
Malik, H. J., 1312
Marcus, Allan H., 297
Mardia, K. V. 643
Mednik, E. F. and Bell, C. B., 953
Meyers, Raymond H. and Iglewicz, Boris, 963
Meyer, Richard M., 964
Miké, Valerie, 1935
Milch, Paul R., 965
Morris, Carl, 1597
Mudholkar, Govind, 1312
Mustafi, Chandan K., 298
Mustafi, Chandan K., 636
Nagao, H. and Sugiura, N., 1937
Nadas, Arthur J., 971
Naus, Joseph and Rabinowitz, Larry, 1935
Nelson, W. C., Aitkin, Murray A., Reinfurt, Karen H., 960
Neuts, Marcel F., 1313
Noether, Gottfried E., 640
Okamoto, M. and Kanzawa, M., 1935
Patel, Jagdish K., 957
Pathak, K. B. and Singh, S. N., 1315
Patil, G. P. and Jogdeo, Kumar, 642
Perlman, Michael D., 1939
Perng, S. K., 637
Prabhu, N. U., 1936
Puri, Madan L. and Sen, Pranab K., 641, 1596
Pyke, Ron and Shorack, Galen, 1313
Rabinowitz, Larry and Naus, Joseph, 1935
Rao, P. V., 965
Rao, J. N. K. and Hartley, H. O., 969
Rao, Poduri S. R. S., 1310
Reinfurt, Karen H., Aitkin,

Murray A. and Nelson, W. C., 960
Rossner, Reinhard and Walter, Edward, 298
Rothman, E., 965
Roussas, George G., 636
Roy, L. K. and Wasan, M. T., 299
Rudolph, G. J. and Laubscher, Nico F., 964
Ruiz-Moncayo, Alberto, 1939
Samuels, S. M., 957
Savage, I. Richard and Berk, Robert H., 969
Schach, Siegfried, 1310
Sclove, Stanley, 1940
Sen, Pranab Kumar and Puri, Madan L., 641, 1596
Serfling, R. J., 966
Severo, Norman C., 966
Shah, B. V., 298
Shah, K. R., 966
Shorack, Galen and Pyke, Ron, 1313
Simons, Gordon and Feder, Paul, 1315
Singh, S. N. and Pathak, K. B., 1315
Singh, Jagbir and Thompson, W. A. Jr., 966, 958
Skibinsky, Morris, 1937
Smith, P. and Bell, C. B., 954
Srivastava, J. N., 637, 641
Srivastava, J. N. and Chopra, D. V., 1937
Srivastava, M. S., 637
Srivastava, Surendra K., 1315, 1316
Srivastava, R. C., 1316, 1598
Starks, Thomas H., 1937
Sucheston, L. and Klimko, L. A., 956
Sugiura, N. and Nagao, H., 1937
Swamy, P. A. V. B., 1940
Tamhankar, M. V., 1316
Tarter, Michael E., 1938
Taylor, Howard M., 1938
Tetreault, Florence G. and Bancroft, T. A., 634
Teugels, J. L., 958
Thompson, W. A. Jr. and Singh, Jagbir, 958, 966
Tiao, George C. and Lund, David R., 967, 1314
Tierney, Martin S., Deely, John J. and Zimmer, William J., 955
Tong, Yung Liang, 958, 959
Truax, Donald and Elfron, Bradley, 1595
Valand, R. S., 1596
Venter, J. H., 1598
Waikar, V. B. and Katti, S. K., 967
Walsh, John E., 968
Walter, Edward and Rosser, Reinhard, 298
Wasan, M. T. and Roy, L. K., 299
Wasan, M. T., 638, 641
White, John S., 1313
Yakowitz, Sidney J., 1314
Zacks, S. and Ehrenfeld, S., 635
Zimmer, William J., Deely, John J. and Tierney, Martin S., 955